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ABSTRACT

Language teaching typically reflects current research, and, until quite recently, grammatical competence (e.g., in the Chomskyan sense) was the major target of linguistic research. Emphasizing the spoken language, the term "fluency," as applied to the foreign language performance of a language learner, is correlated to foreign language proficiency. Some parameters of fluency as found in the literature are examined to see to what extent such parameters should be observed in future studies and what methods should be used to test their influence. Since the term is difficult to define, dictionary definitions are consulted along with professional discussions and language teaching authorities. Fluency is regularly mentioned as one of the goals for foreign language teaching and is discussed in terms of linguistic, psychological, and sociolinguistic factors. A preliminary test was conducted to acquire material for the study of fluency. The organization of the message is evaluated in terms of message length, false starts, impressions, lexical density and variation, and continuity factors are also evaluated. Even when fluency is defined as being independent of the grammatical competence of the language learner, the lack of linguistic resources remains the most usual cause of disruptions, message reductions, and total abandonment of turns in discussion. For teaching fluency, two things should be combined: the words and their use, i.e., the grammar and the pragmatics of the language. (NCR)

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FOCUS ON SPOKEN LANGUAGE

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SPOKEN LANGUAGE AND THE CONCEPT OF FLUENCY

In the past few years, discourse analysts have frequently called attention to the fact that in traditional foreign language teaching little or no attention has been paid to other than grammatical competence (see, eg., Wid-dowson 1973: 65-66, Nyyssönen 1977). Various grammatical elements and sentences have been taught as self-contained units, and knowledge of a language has been equated with knowledge of the grammatical structure of sentences. This has resulted in languages being taught in a vacuum; grammatical competence has been expected to be transferable from such a vacuum to contexts where language is used. Here, as always, language teaching has reflected the situation in research: until quite recently it was grammatical competence (eg. in the Chomskyan sense) which was the major target of linguistic research.

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The situation has been further complicated by the fact that claims concerning the spoken variety of language have generally been based on findings derived from written language or highly theoretical treatments of linguistic competence. One more factor, not at all negligible, which influences our attitudes towards various aspects of spoken language is the common everyday application of the term 'fluency', the way in which we interpret the meaning of a 'fluent' speaker. It occurs much too often that such a loose definition affects language teachers' opinions on the language-behaviour which should be the goal of language teaching. In many cases, this layman concept of fluency, or non-fluency, even overshadows the more professional statements that the fluency of a language learner should be correlated to the behaviour of a native speaker.

Fluency is one of the criteria which are given as parameters of a good native or native-like language-behaviour. The term is used in a variety of meanings and it is obvious that a loose application of the term to what might be termed as 'constant flow of speech' or 'periods of relative speech continuity' (see, eg., Henderson 1974: 122) has been among the most prominent. Connected with the fact that judgements of what is fluent and what is not fluent - even what is a pause - tend to be highly subjective, the ambiguity of the term 'fluency' may often result in a dubious assessment of the FL behaviour of language students. It is the loose application of the term 'fluency' to the FL performance of a language learner and its correlation to FL proficiency¹ that we want to take up for preliminary discussion¹ in this paper. All the results reported here are to be considered tentative only and the purpose of this paper is mainly to discuss some parameters of fluency as found in the literature and see to what extent such parameters should be observed in future studies and what methods should be used to test the influence of such parameters. In our future studies, fluency will be related to the learner's communicative competence and communicative strategies and a Finnish learner's competence will be correlated to that of a native speaker in material which includes both oral reading, writing, and speaking tasks. The phonetic parameters of fluency will also be discussed in greater detail later. What is said below about pauses and the rate of speech is highly tentative indeed, and even now it seems obvious that the information about these features will have to be implemented from further material, which may even result in changing some of the opinions expressed here.

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¹ This paper is a preliminary report on work being carried out in connection with the Finnish-English Contrastive Project at the University of Jyväskylä. For further information about the project, see Sajavaara and Lehtonen (eds.) 1977.

Review of literature on fluency

We often find references to the fluency, or non-fluency, of language learners and language teachers (Rivers 1968: 210) without any exact definition of what the writer means by fluency in each context. Fluency is regularly used in non-technical language, and occasionally even in more technical discussion, for a certain type of language-behaviour. In many cases, it seems, the word is used in a rather inexact dictionary sense, such as that of The Oxford English Dictionary 'a smooth and easy flow, readiness, smoothness; esp. with regard to speech', or that of The American Heritage Dictionary, which defines fluent as 'having facility in the use of language; effortless, flowing, polished'. Although it is not always included in the formal definitions, a rather common interpretation of the word, even among language teachers, includes the parameter of quickness; it is found in The Concise Oxford Dictionary (1976), where one of the meanings for fluent is given as 'expressing oneself quickly and easily'. In many cases, elements such as the length of the sentence and the continuity of the sound-wave as uttered by the speaker are added to the distinctive features of a fluent speaker.

In more professional discussions of the parameters of speech, fluency often assumes a kind of optimum level of achievement. The research on fluency, and on disfluency, of native speakers - in most cases it has been connected with research on various kinds of speech disturbances and on the influence of anxiety on speech (for an early summary of research, see Mahl and Schulze 1964) - has concentrated on a variety of parameters and has also touched upon the problems connected with the rhythm of speech. There seems to be a consensus of opinion on there being a regular pattern of relationship between periods of relative speech continuity, often called 'fluent' periods, and periods of hesitancy (see, eg., Goldman-Eisler 1967). Pausing takes up about 30 per cent of the total time used for encoding messages. The

application of the variable of 'phonetic density' which is expressed as the ratio of the pauses to the total duration of speech involves, in the description of fluency, serious problems deriving from the fact that the pause is an ambiguous concept: is a pause to be considered a segment of silence whose duration exceeds a given threshold and, if so, what is this threshold, or is a pause to be considered a segment of speech which is experienced to be a pause? The percentage of pause duration seems to vary in accordance with the communicative situation in a similar way in the speech of both fluent and non-fluent speakers. In oral reading, for instance, the percentage of pauses seems to vary around 30 per cent with all normal speakers irrespective of the fact whether they are reading in the mother tongue or in a foreign language; in informal free speech, however, individual differences are great and a speech performance which is subjectively evaluated to be fluent may have a pause ratio of about 60 per cent while that of another, clearly non-fluent, sample may be 30 per cent. A preliminary analysis of a larger material seems to indicate that in oral reading by fluent native speakers the pause ratio may be systematically higher in various types of texts than in reading by foreign language students.¹

In many of the studies dealing with fluency or disfluency the material is based on a restricted number of variables. One of the most exhaustive lists of variables is found in Tannenbaum et al. (1967: 208); it includes silent pauses, filled pauses, repeats, false starts,

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¹ The discussion of fluency by Goldman-Eisler (1967: 125) and many other writers is confused to a certain extent by the ambiguous use of the term fluency for certain periods of speech which are characterized by relative speech continuity (as opposed to hesitancy) and for the overall characterization of speech (including both 'fluent' and 'non-fluent' periods). It is this latter type of fluency for which we want to reserve the term in this paper.

message length (words), encoding time (min.), words per minute, sentence length (words), lexical/functional ratio, and subordination index. A number of other criteria could be added from Johnson's (1961: 3-4) categories of disfluency: revisions (I was - I am going), incomplete phrases, broken words, and prolonged sounds. Johnson also goes into a detailed analysis of repetitions and makes a distinction between part-word repetitions, word repetitions and phrase repetitions, whereas the only type of pause which he considers is the filled pause, which for him includes not only interjections of sounds such as uh, er, hm but also "extraneous words such as well, which are distinct from sounds and words associated with fluent text". Like Johnson, most scholars seem to have a preconceived idea of what belongs to a fluent text and what does not belong there.

Pauses have attracted a considerable amount of attention. For various reasons, a distinction should be made between juncture pauses and hesitation pauses (breathing pauses may or may not coincide with these; see Mahl and Schulze 1964: 56, Henderson 1974). Juncture pauses are relatively short and mostly unfilled; they may occur during periods of relative speech continuity and their major function is that of marking the termination of grammatical units, which means that they point both backwards and forwards. Hesitation pauses, which are often defined, rather subjectively, as silences of unusual length (see Henderson 1974: 121), are often longer than juncture pauses and they tend to be filled; they may coincide with juncture pauses. One of the features with which pausing is connected is the length of the phrases and this, for its part, is interrelated with the question of phonological phrases, which are characterized by the existence of one or more phonological words, a pitch contour and rhythmical structure, and terminal junctures. As early as 1907, Lipsky pointed out that pauses were more common after long subject noun phrases than after shorter ones. Fonagy and Magdics (1960) found out that the length of phrases (number of words) correlates positively with the rate of utterance, and

Bierwisch (1966) showed that the rate of segmentation per word boundary decreases as the rate of utterance increases. According to Martin et al. (1971), the division into phrases depends on the length of total utterance and that of its syntactically defined constituents; there is a tendency to place junctures between the major syntactic constituents but the junctures need not necessarily group the sentence elements as predicted from the constituent analysis (see Martin 1970); junctures are more common after and before long syntactic units than short ones. Martin et al. (1971) also noticed that speakers tend to minimize segmentation but that there is more of it if the sentence length increases. They point out (Martin et al. 1971: 230) that the constituent analysis as such may not be of value for the analysis of pausing because the pause pattern follows certain phenomena of readjustment in the surface structure. Brown and Miron (1971) have shown that 64 per cent of the pause variance can be explained by reference to syntactic analysis (including IC analysis, stochastic information analysis and deep structure analysis).

It has been found out (see, eg., Henderson 1974) that periods of hesitancy often precede, and predict, periods of relative speech continuity. There seems to be a clear difference in the nature of the gaps within hesitant periods, on the one hand, and periods of speech continuity, on the other, while the transfers from 'continuous' to 'hesitant' and from 'hesitant' to 'continuous' speech cannot be categorized according to the grammatical/non-grammatical parameter. This means that hesitation pauses need not follow the constituent analysis of the sentence. Henderson (1974: 122) concludes that "it is during periods of hesitancy that decisions concerning the semantic content of subsequent speech are likely to be made". For a long time there has been evidence of the hesitation pauses being connected with the beginning of the units of encoding (see Lounsbury 1954) and of the hesitation pauses and the lexical elements following the pauses being interrelated

(see Tannenbaum et al. 1965). The words following hesitations are less predictable than the words occurring in periods of relative speech continuity. According to Martin and Strange (1968), the syntactic-semantic structure precedes the choice of words and the latency between intention and individual word selection depends on vocabulary access, the number, order and complexity of the syntactic and semantic selection rules governing the choice of each word, which means that a great deal of weight is put on decisions preceding words of high information content.

Jaffe et al. (1972) are of the opinion that speech and silence are not causally related. They think that the durations of both are separately determined by non-overlapping sets of constraints, whose patterns depend on changes in the internal state of the speaker and the social context in which he finds himself. According to them, too, hesitation reflects the speaker's difficulty with lexical choices. Tannenbaum et al. (1967: 208) are of the opinion that "some hesitation phenomena are symptomatic of cognitive uncertainty", especially when the speaker is making decisions on semantic problems. According to Tannenbaum et al. (1967: 208-209), an increase in the cognitive demands of the message results in an increase in the ratio between lexical and functional words as well as in silent pauses, which "account for the slower encoding rate and the greater total encoding time". When the speaker has less to say and, therefore, fewer choices to make, his messages "are shorter in length and take less total time, and the decrease in the amount of decision-making results in fewer silent hesitations".

An attempt to evaluate fluency by reference the amount of hesitation pauses involves, however, a vicious circle: an utterance which includes a great number of hesitation pauses is considered non-fluent but the concept of hesitation pause is as subjective and inaccurate as the concept of fluency as a whole. A pause in speech can be classified as hesitation only on the basis of subjective observation from the part of the listener and his criterion for classifying pauses is

based on his impression of fluency: pauses which break the smooth continuity of speech are classified as hesitations while all other pauses are classified as 'fluent pauses'.

There is plenty of evidence for the fact that the rate of delivery of spoken messages varies a great deal both within and among speakers (see Broen and Siegel 1972). Factors which seem to affect it are the degree of linguistic processing required, the emotional state of the speaker, voluntary control exercised by the speaker, and various situational factors of stress and anxiety (for research results as concerns the rate of speech, see Lehtonen 1978).

One of the problems about fluency is the question of the interrelationship between the information content of the message and the actual spoken form which the message is given in speech. Is a speaker who has very little to say but who is able to speak for long periods to be considered a fluent speaker or not? This problem includes taking a stand towards certain redundant or cognitively empty expressions in regular use, such as well, you see, I know, I mean, sort/kind of, let me tell you, etc. It is also connected with the general problem of redundancy: what may be redundant as concerns the information content of the message may be extremely valuable for the processing of the information by either the speaker or the hearer. Crystal and Davy (1975: 85), who emphasize the smoothness of continuity in discourse, mention several of these as factors which help in building up a smooth discourse pattern. In many cases, phrases like these may however be used as a disguise for the hollowness of the message: the speaker has nothing to say but he is 'fluent' in the sense that he is capable of filling the vacuum with an acoustic noise. Many of these phrases are counted as disfluencies in an analysis of Johnson's type (Johnson 1961: 3), but a native speaker's assessment might often be quite the reverse despite the absence or scarcity of cognitive content. Phrases and idioms like these are

often necessary for the speaker to keep the channel open, so that he has more time for organizing his thoughts. Many of these also fall within the area of conversation management devices, which govern the turn-taking in conversation and can be used by the speaker and the hearer to fulfil certain textual and participatory roles (see Ventola 1977: 76ff.). Repetition¹ and reformulation after false starts is often necessary before the speaker finds the expression or complex of expressions which suits his purpose best. Occasionally, certain indefiniteness of formulation may serve as a means for sounding the opinions of the hearer (see also Rivers 1968: 191).

Fluency is not something that can be defined absolutely without a reference to the context where the text occurs, and it could best be described as a continuum stretching from very formal situations where there are no allowances as for the continuity and unbroken character of the speech-signal to highly informal situations in which complete and unbroken utterances tend to be an exception rather than a rule (see, eg., Crystal and Davy 1975: 87). Crystal and Davy connect this phenomenon primarily with the time element: "The 'informality' of conversation is identified primarily by the absence of external pressures to talk along predetermined and rigid lines ..." The external pressures include, it is often forgotten, also those present in the hearer, of which the speaker may or may not be conscious, and the ultimate statement as to what is fluent and what is not is the hearer's. The speaker may himself be conscious of the non-fluency of his utterance and even feel some anxiety about it, but he may as well be totally ignorant of how the hearer is reacting to his utterances. He does not notice that he is pausing in places where the pauses irritate the hearer, he does not notice the fact that he is not completing his sentences,

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¹ It is to be remembered that repetition may serve some specific purposes such as intensification and emphasis (see Persson 1974).

that he is making false starts, rephrasing his sentences, trying to seek the right word 'aloud' and so on. Such 'disfluencies' are not a problem of foreign language teaching alone; on the contrary, it is even possible that features of speech performance which are regarded as disfluencies in a speaker's mother tongue may be accepted in his foreign language performance as elements associated with a foreigner's speech. The situation is the most difficult with such speakers of either the mother tongue or the foreign language who are conscious of their disfluency and who, as a result of this consciousness, are prevented from finding in communicative situations such expressions as will help them to avoid hesitation and the results arising from awkward hesitation.

Internal pressures of the speaker may be of great importance as a factor influencing fluency and disfluency. Broen and Siegel (1972) found out experimentally that the most important factor is not the situation itself but the subject's evaluation of what is required in the situation. They came to the conclusion that "if the subject regards /the situation/ as one in which it is important to speak carefully, he will be relatively fluent". For Broen and Siegel, the markers for disfluency were the use of interjections and repetitions, but they rightly point out that if other criteria, such as pauses for instance, had been considered, the results might have been slightly different. Anyhow, they call attention to an important parameter affecting the fluency of speakers. Findings like this seem to correlate quite well with results which seem to indicate that people can speak, if they find it necessary, for long periods with "almost total fluency" (Martin and Rangaswamy 1972: 366). This is interpreted to mean that there is no 'normal' fluency or non-fluency.

Fluency and foreign language teaching

Fluency is regularly mentioned as one of the goals for FL teaching. Mostly the word is used rather loosely without any specific reference (see, eg., Rivers 1968: 167), obviously to describe the way in which native speakers use their language. The fluency of native speakers is often given as a model of achievement (see, eg., Harris 1969: 82; Clark 1972: 93, 123). Clark, for instance, states that at this level speech "is natural and continuous. Any pauses correspond to those which might be made by native speakers". Stumbling, pauses, rephrasings, unfinished utterances and silence are considered features of non-fluent speech. In Clark's system of marking, the scales for pronunciation, vocabulary and structure are separated from fluency. The goal for fluency as correlated to the native-speaker performance is not much helped by definitions such as that by Lado (1961: 241), according to which "the factor of oral fluency becomes simply the ability to produce at a normal rate of speed the words and structures of the language in the stress and intonation patterns of that language", because what such a definition says is that a foreigner should speak the language like a native speaker. A definition like this is better than Clark's classification of the criteria for testing because Lado does not separate fluency to cover pauses, rephrasing and similar features only but takes it to mean the whole performance in the target language. Even if we would not want to discuss the usefulness of a native-like performance as a FL teaching goal, definitions of this kind do not help much because of the subjective nature of the interpretations given for "normal rate". Even the words and structures considered "normal" may be open to criticism. In most cases, statements like this refer to the norms of written language whereas informal conversation abounds in "loosely co-ordinated constructions, incompleteness, ungrammaticality, stylistic vacillation, and many other linguistic 'errors'" (Crystal and Davy 1975: 87).

Among various parameters of disfluency, pause, interjections, and repetition have been the favourite ones (see above and also Martin and Rangaswamy 1972: 360). Conversely, this gives the impression that speech without hesitation, repetition, and interjections is fluent and characteristic of normal native-speaker behaviour, which is obviously wrong. Rivers (1968: 168) is quite right in pointing out that the omission of features like these as well as of various clichés, tags, expletives and exclamations results in the stepping up of the rate of speech but "it would be beyond the capacity of the listener-speaker to assimilate much quick-fire conversation". Di Pietro (1970: 50) also points out that the analogy with the native speaker, which is offered as a model breaks down because phenomena like stuttering, hesitating and not completing sentences are common in the unedited and unrehearsed speech of native speakers: "... we teachers expect our foreign students to utter only grammatical sentences while allowing our fellow speakers of English all kinds of liberties with the language." The research on various phenomena connected with disfluency as reviewed above, therefore, is useful for the definition of the parameters necessary for the observation of the performance of native speakers.

The kind of fluency which is referred to by Lado should be approached through the entire communicative behaviour of a foreign-language speaker (see Sajavaara 1977: 22). We have elsewhere (Lehtonen, Sajavaara and May 1977: 20-22; Sajavaara 1977: 23) listed a number of parameters which we think are important elements in a language speaker's fluency. The factors have been divided into linguistic, psychological, and sociolinguistic. This is a revised version of the list:

Linguistic factors:

- (1) phonological and phonetic factors: absence of phonetic and phonological errors, also as concerns suprasegmental features, variations in performance, mastery of perceptual cues in production and reception (see Lehtonen 1977);

- (2) syntactic factors: absence of syntactic errors; capacity of producing new utterances to fulfil communicative needs;
- (3) semantic factors: awareness of the interrelationship of syntax and semantics as well as of language and the world outside;
- (4) lexical factors: mastery of the vocabulary necessary for language-behaviour in a given situation;
- (5) textual factors: awareness of the problems of cohesion, ellipsis, deixis, etc.

Psychological factors:

- (1) absence of phonological distortion brought about by increased breathing rate and noise caused by tension;
- (2) absence of rephrasings, repetitions, pauses (either juncture or hesitation) and interjections not accepted by native speakers (which in most cases means that they affect communication).

Sociolinguistic factors:

- (1) awareness of social judgements necessary for the production of acceptable utterances in a given situation;
- (2) sensitivity to various sociolinguistic, cultural and environmental features including those which are based on interpersonal relationships;
- (3) correct interpretation of the varieties of language and functional values of utterances;
- (4) ability to make the necessary judgements and decisions within the time constraints of the communicative situation, which are set by the speaker/hearer interaction and certain other external criteria; the speaker/hearer interaction for its part is conditioned by a complex of internal (personal and non-personal) and external parameters (time is important in this respect only and this factor is, for instance, superimposed on the length of the sentences and, in this way, on the ways in which the cognitive content of the message can be expressed).

All these factors contribute to the impression of fluency, but it must be remembered that what is fluent in one situation may not be considered fluent in another. It is wrong to assume that a speaker's performance would be any different in a foreign language from that in his native language as regards various personal characteristics: we must make an allowance for hesitation, rephrasing and pausing of various kinds.

In studying fluency, we must always remember that in most cases communication is a two-way phenomenon, and a speaker's performance is conditioned by what the hearer does or does not do, i.e. by the linguistic and other cues which the hearer receives from the speaker and produces in connection with the communicative act. In many cases, performance which may be considered non-fluent does not originate in the speaker at all: it may be a reaction to what the hearer is doing simultaneously. The speaker may have to readjust his message in mid-sentence either to make himself understood or to get the reaction he wants to bring about. Non-fluency may also be due to what the previous speaker has said.

Most of the research on disfluency reviewed above was carried out in the 1960's before the beginning of modern textlinguistics and discourse analysis. As a result of recent research we have today access to much more detailed analysis of the factors in communicative situations which influence the form the use of language assumes. According to Hasan (1973: 275-280; see also Ventola 1977: 32ff.), the register used is determined by what is called the contextual construct consisting of the subject matter of discourse (language about something, affecting lexical choices in particular), situation-type (nature and purpose of the transaction), participant roles (affected by the situation-type), mode of discourse (overall purpose of the discourse), and medium of discourse (spoken/written). When the construct is applied to a situation, we get its concrete representation, which

Hasan calls the contextual configuration. As far as a non-native speaker's language is concerned, this contextual construct remains practically unchanged from what it means to the native speaker: the only major difference seems to be in participant roles (it is true that in most cases the variety of situation-types is more restricted for a non-native speaker).

In a situation, a person normally assumes several roles. In addition to social roles, they include textual and participatory roles (Hasan 1976: 9). The textual roles are those of the speaker and the hearer and they are interchangeable in most cases. The participatory roles are those of the initiator and the respondent. For FL speakers the social roles are rather restricted: in most cases the typical set-up is a stranger talking to a stranger and most of the social criteria found in connection with L1 do not apply. A greater part of the social roles are levelled down to a foreigner's role, which also means that native speakers' expectations are quite different from what they are towards a native speaker. A foreigner may, for instance, be given more time for the formulation of his message. The normal conversational mechanisms which govern the interchange of textual roles, ie. the turn-taking system, for instance, do not obviously function the same way as they function between native speakers (see, eg., Ventola 1977: 76ff.): a native speaker talking to a non-native speaker is more prepared to wind up the non-native speaker's sentences during and after hesitations and pauses and to give reformulations.

A non-native speaker seldom achieves a symmetrical position with the native speaker (see Ventola 1977: 36), which is not an uncommon situation between native speakers either. A non-native speaker talking to a native speaker retains, in most cases, the participatory role of the respondent; he remains less active and is willing to cede the role of the initiator to the native speaker. It is to be expected that a non-native speaker's role as a foreigner and a respondent will influence reactions to what are described above as parameters of fluency.

Preliminary test

The preliminary test to acquire experimental material for the study of fluency was carried out in English only; the material should be contrasted to material produced by the same Finnish informants in Finnish. There were two groups of informants: (1) ten university students of English who had done at least three years of English at the university level and acquired the language proficiency which is required for teaching English at the comprehensive school; and (2) two native speakers of English who teach English at the university level (they were both married to Finns and had spent several years in a Finnish-speaking environment).

The test consisted of a short oral description of cartoons. The informants were given a short summary of the cartoon before they were asked to narrate the contents. The idea in giving the summary was to try to make the narrations more homogeneous in their contents. There were five cartoons called 'Herbert' and four called 'Andy'. Both of the native speakers did all the cartoons, while nine of the Finns did 'Herbert' and six did 'Andy'. So, the test produced 69 texts by Finns and 18 by native speakers of English. For the present paper, only the 'Herbert' narrations were analysed, ie. 45 by Finns and 10 by native speakers of English. One of the native speakers was much more productive than all the other informants; his texts run to a length which is four or five times that of the Finnish informants. The results show, however, that this does not undermine the test. The number of native-speaker informants was too small for generalizations but this test can be used as an experiment to direct future studies in this field.

Narration is typically a text where the speakers are expected to produce fairly well developed ideas expressed in full sentences but pauses and hesitations are also allowed. The test situation is not formal but it seems

that the informants expected the situation to require a variety of language which was formal rather than informal, but not so formal as public speech, for instance. This means that the informants obviously exercised some control over the language-behaviour as compared to normal everyday conversation. As found out in research on disfluency, speakers can influence their speech a great deal; when the situation is expected to require it, speakers are able to go on talking for long periods without hesitation and other features of 'disfluency'.

In this test, errors were disregarded. This concerns all levels of linguistic analysis, including various features of textual and style analysis. The time which the informants spent on producing each text (sometimes called the 'encoding time') was recorded (and the results can be found in the appendix) but it was considered to be of secondary importance in narration because the sociolinguistic constraints of interaction, which may impose temporal restrictions, do not normally affect texts of this type (see below the discussion of message length). The words-per-minute ratio, which is sometimes taken to be one of the parameters of fluency, was not computed (for the rate of speech, see Lehtonen 1978).

The test was originally designed as an attempt to study pauses in the English speech of Finns as compared to those in the language of native speakers of English. This initial starting-point imposed certain restrictions on what kind of features could be taken into account. The following features were observed:

Organisation of the message:	Message length (number of words) False starts Imprecision Lexical density (functional/ lexical ratio) Lexical variation (type/ token ratio)
Continuity factors:	Sentence length (number of words) Clause length (number of words) Subordination index Number of pauses: filled and unfilled

Length of units between pauses
 (number of words)
 Incomplete phrases
 Revisions and repetitions
 Extraneous words and phrases
 Broken words
 Prolonged sounds

For many of these parameters the results are only preliminary, and the small number of informants as well as their relatively homogeneous level of achievement makes it rather difficult to draw definite conclusions from the present material. The results should therefore be considered only tentative.

Organisation of the message

Message length. - Despite the fact that the informants were asked to read a short summary of each cartoon before the beginning of the narration, there is quite a lot of individual variation in the message length. The average length of all the texts is 95 words; if, however, the texts by one of the two native speakers (I 10)¹ are disregarded, the average is only 73. The texts by I 10 run to the average length of 315 whereas those by the other native speaker (I 11) remain below the lowest Finnish average, which is 59 words, at 56 words. The highest Finnish message length average is 111 words (I 3).

The lengths of the texts produced by one and the same speaker vary a great deal. The longest text by I 10 was 437 words and the shortest 254 words. The longest and the shortest text by I 3 (the highest Finnish average) were 177 words and 72 words respectively. The nature of the cartoon seems to affect the length of the text, which is quite obvious: the texts for H 3 are the longest for eight informants and those for H 4 are shortest for nine informants.

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¹ I = informant, H = Herbie.

The variation in the length of the text is a piece of evidence of the differences in the problem-solving capacity of individuals: each individual approaches the task of having to describe an event in a different way but the variations within individuals show clearly that the task also affects the results. In general, the 'productivity' index depends greatly on the situational motivation of the speakers to participate in the discussion. The present test situation was created so that there would be a restricted amount of free play, and the written summary which the testees were asked to read before narration was supposed to function in this capacity. The narration was to be kept within the broad limits of the written summary, because it was thought that this type of test would be better in measuring the speakers' linguistic competence than a free-delivery type of test, which rather tends to measure the testees' overall imaginative and expository capacities.

This test did not prove that a native speaker is more 'wordy' than a non-native speaker. It remains to be studied whether one and the same speaker's message lengths differ in the mother tongue and the foreign language.

False starts. - False starts are an indication of the fact that the speaker notices that his original plan does not fit what precedes or comes after the passage concerned. The nature of the task obviously affects the way the speaker makes his original plan; a public speaker, even if he does not write a manuscript, programs himself carefully. In the present material, false starts are rather infrequent, which is consistent with the hypothesis that this kind of narration requires a certain level of formality.

There are a number of syntactic false starts of the type there is/there are drops of ink (I 2/H 5), then they/when they have got (I 3/H 3), a man/there is a man (I 3/H 4), to his apartment a balcon(y)/ ym / he has a balcon(y) (I 6/H 2), and from this pen / and this pen is a leaking (I 11/H 5), or false starts connected with the processing of information

such as his boat is / or he has already lots of big fishes (I 8/H 1). The total number of instances which can be listed as false starts is 12 (3 of them occur in texts produced by native speakers).

Imprecision. - Imprecision is a feature which is rather controversial as regards fluency. The speaker may have several reasons for using vague expressions and formulas: he may not have a clear idea of what to say; he does not want to say it directly; he has nothing to say; he cannot find the proper expression. It could be hypothesized that a person who speaks more (produces longer texts) is more often faced with this kind of situation. It could also be expected that a foreigner would have to resort to imprecision more often than a native speaker.

In the present material, the number of the instances which can be listed as those of imprecision was only 13, eg. and looking at him and so on (I 10/H 1). Nine of them occur in texts by I 10, who is a native speaker and produced long texts. The remaining four instances are in texts by three Finns. Since some amount of imprecision could be expected in texts of this length, the non-existence of imprecision formulas in most texts by Finns may be explained by the fact that they have never been taught how to be imprecise in English or that their idea of acceptable text in test circumstances does not allow for imprecision.

Lexical density. - Lexical density is the ratio between function words and lexical words¹. All lexical items were counted irrespective of whether they were correct or not.

The difference between the Finns' overall lexical density 0.44 and that of the native speakers 0.47 is not decisive. What is interesting is that the native speakers used proportionately more function words than the Finns and

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¹ Words which were counted as function words were those listed by C.C. Fries, The Structure of English, New York: Harcourt, 1952, 87-104.

that both of the figures are clearly above the proportion suggested by Fries (1952: 104), which is roughly 0.30-0.35. The two native speakers have the densities 0.44 and 0.49 (I 10 and I 11); four Finns have densities lower than the lower native-speaker one, varying between 0.40 and 0.43, and two Finns reach to the top 0.47,

Without further studies it is impossible to tell whether the result which is contrary to our expectations is a mere coincidence or due to the restricted native-speaker population. The result is in agreement with the fact that too high a lexical density would mean too heavy an information content in the message, which in some cases might make the processing of the information quite difficult. It may be that a native speaker is more sensitive to the acceptable level than a non-native speaker.

Lexical variation. - Lexical variation is also called the type/token ratio and means the ratio of separate lexical words to all words. The Finns vary between 0.31 and 0.43, the mean being 0.35. The more productive native speaker has a ratio of 0.29, which is well below the Finnish mean, while the other native speaker has the ratio 0.37. There seems to be some correlation between lexical variation and message and sentence length. The lowest lexical variation ratios are those for informants 2, 3, 4 and 10, and these same informants are found at the top of the list for message length and sentence length; as we will see, they are also the most prominent as concerns incomplete phrases, revision and extraneous expressions. The Finn who has the shortest message length has the highest lexical variation ratio 0.43. So, message length and lexical variation seem to be conversely related. This result may seem controversial but it need not necessarily be so: long messages seem to include a greater amount of repetition. The low ratios may be partly explained by the fact that most of the informants who had low variation ratios have high lexical densities, which means that they have more function words. But when we calculated the ratio

of separate lexical words to all lexical words the same four informants are found among those with the lowest ratios, the native speaker (I 10) at 0.52 and the Finns between 0.56 and 0.62, the other Finns varying between 0.58 and 0.72 (I 7). The other native speaker has the highest ratio 0.74.

Because of the rather controversial nature of the results of this test, lexical density and lexical variation did not provide much valuable information. It is to be expected, however, that tests with learners at lower levels of proficiency might produce different results.

Continuity factors

Sentence length. - In this text the sentence length was calculated as the number of words between potential locations of periods in the utterances; the appearance of coordinating conjunctions was considered to be a signal for the continuation of the sentence.

The sentence length varies a great deal. The personal means vary between 11.6 words (I 7) and 69.7 (I 9) for the Finns and 22.3 (I 11) and 34.1 (I 10) for the native speakers. Sentence length seems to be an idiosyncratic feature above all: some speakers tend to use coordination excessively when they are narrating. There is also a certain cumulative effect: the number of words per period is higher in later texts by one and the same speaker. By eight informants (including native I 10) the first text has the shortest sentences while each informant's longest sentences are found in texts 3 to 5. The Finnish informants had more variation in their texts; for I 4, for instance, the average lengths of sentences vary between 20 words and 72.5 words (a reverse case is I 7, whose respective figures are 8 and 16.7). The native speakers are more consistent in this respect; there is only one text by a native speaker (I 10/H 4) where the average sentence length is above 35 words as against 11 texts produced by Finns. With the exception of this text, the native speakers vary between 10.6 and 34.5.

A tendency towards short sentences is even more striking in the texts produced by the Finnish informants. A total of 22 texts have an average sentence length of less than 20 words, and there is only one text by a native speaker among them (I 11/H 2).

There is no direct correlation between message length and sentence length.

Clause length. - Clause length is the number of words in separate matrix and embedded clauses (only those with full verbs were counted).

There does not seem to be any direct correlation between sentence length and clause length, with the possible exception of H 1, where the shortest clauses are found alongside with shortest message lengths. The longest clauses are found in texts which have the longest message lengths, i.e. H 3 to H 5. There is no clear evidence for a distinction between the Finns and the native speakers. The lowest and the highest averages for the former are 6.3 and 8.2 words (4.6 and 10.4 in individual texts) and those for the latter 7.4 and 8.4 (5.5 and 10.3) respectively. The overall average clause length for the Finns is 7.6 and that for the native speakers 7.9, which may be seen as an indication of a tendency for the clauses to be slightly longer in the English of native speakers. There are 19 texts with an average clause length of less than 7 words and only two of them are by the native speakers, but only two of the 11 texts with clause length average of 8.5 words or more are by the native speakers.

Subordination index. - The subordination index is the ratio of embedded clauses to all clauses. The average index for all the texts produced by Finns is 0.25, which means that every fourth clause is an embedded clause, while the same index for the native speakers is 0.36, which means that more than every third clause is an embedded clause. This difference seems to have some significance. However, the highest subordination index is that of a Finnish informant; it is 0.40 (I 9, who also had the highest average sentence length).

The indexes per text vary between 0 (three instances, all in texts by Finns) and 0.6 (I 9/H 5). The subordination index is normally higher in the later texts by each informant.

Number of pauses. - The pauses may be either juncture pauses, which may or may not correlate with the immediate constituent analysis of the sentences, or hesitation pauses, which may be either filled or unfilled. For the present paper it was not possible to carry out a thorough IC analysis of the texts but it is quite obvious that neither the native speakers nor the Finns speaking English follow such a division in their speech.

The pause/clause ratio gives us a rough estimate of the correspondence between IC elements and pauses. The overall pause/clause ratio for the Finnish informants is 2.2, which means that there are more than two pauses, on an average, per each clause. The native speakers' index is 1.3. The two native speakers differ from each other: I 10 has the index 0.8, which means that he does not even stop at all clause boundaries, and I 11 has the index 1.8. The Finns vary between 3.0 and 1.5.

The number of pauses also gives us the length of phonetic clauses in words, which seems to correlate to the pause index to a considerable degree. The lower the pause index is, the longer are the phonetic clauses. The overall phonetic clause length for the Finns is 3.5 words and that for the native speakers 7.3 words (the Finns vary between 4.9 and 2.8; the two native speakers have 9.9 and 4.7). It is evident that the Finns have more pauses in their texts; it is also possible that the within-informant variations are greater, ie. the non-native speakers are more easily affected by problems arising from what they have to say.

The number of filled pauses is rather regular, with a few exceptions. The number varies between 10-20 per cent of all pauses. I 3 has, however, 34 filled pauses among 111 pauses, while I 7 has no filled pauses at all. I 10, whose pause index is only 0.8, also has proportionately fewer filled pauses; their percentage is only 6 %.

Incomplete phrases. - Similarly to false starts, incomplete phrases are infrequent. The total number is only eight, and five of these instances are in the texts by I 10. The remaining three are in the texts by informants 2, 3 and 4. All these four are at the top of the list of average message length and sentence length. It seems that speakers who produce longer messages also resort to incomplete sentences more often than others. These same informants also had 7 out of the 12 instances of false start.

Revisions and repetitions. - There are a total of 86 instances of revision or repetition, 25 by the native speakers (23 instances by I 10). Repetitions were not separated from revisions because their number was rather insignificant and in some cases it is rather difficult to make the distinction.

In some cases, the reason for the revision is fairly obvious from the text. In 13 instances the revision was due to an erroneous or indistinct pronunciation of a part of the message, eg. cut his hair and bear(d) [beə] while / beard / while two (I 1/H 3), is picked by a kirl / girl (I 2/H 2). This kind of revision is also found in the texts by native speakers, eg. starts to clip his [hiə] and b... hair and beard (I 10/H 3). In 17 instances the obvious cause for revision is syntactic: the original syntactic plan was not possible and the speaker winds the utterance back, eg. he begins to grow f... / grow a flower (I 2/H 2), and he's taken / he's been taken (I 4/H 3), where they are selling / or where they sell (I 9/H 5), the man / [ym] who whom they have (I 6/H 3). In 30 instances the speaker is either planning the continuation of the message (loses all his fishes and / and and // and all he / has got, I 2/H 1) or he notices that what he says does not exactly fit the contents of the cartoon (the policeman l...men lock, I 2/H 3). Lexical hesitation or lexical correction is the reason in 23 instances (has climbed on the table in order to change... change a lamp (=bulb), I 2/H 3); he is barefoot / barefooted, I 4/H 3).

Extraneous words and phrases. - The number of extraneous words and phrases is quite high, totalling 50 instances (a total of 124 words being involved). Only eight instances occur in non-native texts and all the native-speaker instances in texts by I 10. All the eight non-native instances of extraneous words and phrases are in texts by informants 2, 3 and 4. Extraneous words and phrases include instances of of course, well, I guess, now, as they say, you (can) see, I think, sort of, never mind, anyway, I mean, okay, etc.

Broken words. - In most cases broken words are a result of similar processes as hesitation pauses. The total number of broken words in the test material is 17. Only three of the informants (4, 9, 10) have none.

Prolonged sounds. - There are occasional instances of prolonged sounds; the total number is six only. Their function seems to be roughly the same as that of broken words or some pauses.

Conclusion

By analysing features like the ones which have been analysed above, it is possible to work out an outline of the features which characterize native and non-native speaker performance. The number of native speakers tested here was much too small for reliable generalizations, particularly since the two informants happened to be quite far from each other as concerns several of the parameters concerned.

It could be assumed that on the basis of what fluency is generally expected to be, native-speaker performance should be characterized by relative speech continuity (few pauses outside junctures), non-appearance of false starts, revisions or failures to complete sentences, varied vocabulary, a rather elaborate sentence structure, precise expressions, and few extraneous phrases and words. It turned out that considering the criteria mentioned here

alone, the non-native performance was more native-like than the native performance. The only exceptions among these parameters were the number of pauses, which was definitely greater in non-native texts, and the subordination index, which was higher for natives despite the fact that the non-natives had longer sentences on an average. Otherwise, the native speakers produced a greater number of false starts, rephrasings, extraneous words, and instances of imprecision or incompleteness. One-half of all the instances of false start, incompleteness, imprecision, extraneous phrases, and repetition are in native-speaker texts, and two-thirds of the non-native instances are in texts by informants 2, 3 and 4. These same Finnish informants have a clause length which is more or less the same as that of the native speakers and their subordination indexes are high too, while their lexical variation indexes are low (0.31-0.33) and density ratios high (0.46-0.47), approximating those of the native speakers.

The next step in the tests should be the exposure of the various categories of non-native speakers to native-speaker criticism and tests to provide us with material about the informants' Finnish. The reason why non-native speakers attested fewer disfluencies (native speakers obviously have attained 'fluency' in the sense it is expected of non-native speakers at the highest level of performance) than native speakers in this test may be in that

- (1) the non-native speakers assessed the requirements of the situation differently and they made a conscious effort to speak without obvious marks of hesitation;
- (2) FL teaching aims at 'fluent' speech, i.e. the model given to a FL learner is that of a normative grammar, often based on literary standards; there are no 'disfluencies' in such standards, and the students are, accordingly, never taught how to be disfluent;
- (3) in the analysis of the test results, errors were disregarded, although they should be regarded as instances of 'disfluency' (in many cases the apparent continuity of the text is possible only through erroneous grammar or

the use of unacceptable lexis), and no attention was paid to various textual and stylistic features (non-native texts are often poorly organized and repetitive);

- (4) individual variation, between and within informants, is great, and the results here may have been affected by the perhaps exceptional nature of the texts produced by one of the two native speakers.

The present material is sufficient for throwing a shadow of doubt above grading scales such as that by Clark (1972: 93), because most of the features suggestive of lower grades were found to be features in the performance of native speakers rather than in that of non-native speakers. Such features include "occasional stumblings or pauses at unnatural points in the utterance" (on the basis of the present material it is rather difficult to assess which the natural points are), "some definite stumbling but manages to rephrase and continue", "long pauses, utterances left unfinished", etc. Pausing, both juncture and hesitation, is also a rather ambiguous criterion. There is plenty of evidence for juncture pauses not coinciding with boundaries of surface IC elements (one of the two native speakers has the phonetic clause ratio of 0.76, which means that he did not even produce a perceptible pause at clause boundaries or periods where a pause might be expected). Hesitation pauses may occur almost anywhere and more research is needed as to the combined effect of hesitation pauses, revision, imprecision, and extraneous phrases.

The superfluous pauses which were found to be a feature of the Finns' way of speaking English might be explained as a feature which is derived from the way they speak Finnish (for pausing and glottalization in the Finnish variety of English, see Lehtonen and Koponen 1977). However, much of it could be explained by the fact that pauses and, possibly, repetition are the only ways which non-native speakers have to give themselves more time for finding the correct expression: they have never been taught how to behave when they are faced with such a problem, when they have to keep

the communication channel open but they have nothing to say or they do not know how to give expression to what they have to say. The speakers do not simply know how to adapt the communication strategies they have in the mother tongue to the situations which arise in the foreign language, and even if they knew what the right way of behaving in a certain situation would be, they have not got the verbal means to react in the proper manner. That is why, elements like this should be an integral part of any language course.

The material discussed here shows clearly that the term fluency should be given up in contexts where language teaching is dealt with unless it is defined carefully. Before any further conclusions can be drawn, we need

- (1) more information about the features studied here in a greater number of texts produced by native speakers;
- (2) more information about such features in L1 and L2 speech of the same informants;
- (3) native-speaker judgements concerning the 'fluency' of various kinds of non-native performance;
- (4) research on the impact of variation in the parameters studied on the comprehension (and non-comprehension) of messages;
- (5) research on the functioning of these parameters at different stages of FL learning; and
- (6) research on the functioning of these parameters in different kinds of communicative situations.

The conclusion reached here may sound rather controversial: teaching students how to be 'disfluent' makes them sound more native-like. Whatever fluency is it is not a variable which is open to either physical or grammatical means of measurement. It is also obvious that it is much easier to give an exact definition for 'disfluency' than for fluency. If being disfluent or non-fluent means that, according to the listener's intuition, the speaker's performance - or the flow of ideas as transmitted by the speaker's utterances - does not flow evenly and without

disruptions, fluency can be correlated to the general acceptability of speech, and as pointed out above, fluency is in this respect a concept which materializes on the basis of the listener's reactions to a speaker performance.

It would be a crude simplification of the real state of affairs to believe that fluency is simply a parameter of good language competence. A person who may govern the finest nuances and complexities of literary expression very skilfully may be disruptingly non-fluent in his speech performance, and another person whose vocabulary and command of structural options are rather restricted may be able to carry out fairly fluent communication by using his restricted means of expression with great skill. If fluency means, as it is understood above, that the communicative processes meet the listener's expectation, that there is a certain communicative fit in this respect, it is not necessary to pay attention to the correctness of grammatical structures and absence of grammatical errors as components of fluency: what is needed is an assessment of what sort of attitudes various elements in a speaker's performance trigger in the hearer.

Teaching fluency involves teaching the pragmatics of a given language, and in this respect there is not much difference in the mother tongue and in foreign languages. In the teaching of both it has been a badly neglected area. A fluent speaker commands the communicative strategies in the proper way, and this skill helps him to overcome the critical moments in the flow of communication, while most disfluencies are obvious consequences of various 'strategy failures' in the processing of communication. Even if fluency is above defined as being independent of the grammatical competence of the language learner, the lack of linguistic resources remains the most usual cause of disruptions, message reductions, and total abandonment of turns in discussion. For teaching fluency, two things should be combined: the words and their use, i.e. the grammar and the pragmatics of the language.

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Values for some tentative parameters of fluency in the texts produced by the informants of the pilot test (for further information, see the text):

		1 message length	2 sentence length	3 subord. index	4 length of phonol. clauses	5 pauses / clauses index	6 lexical density	7 lexical variation (type / token)	8 lexical word type / token	9 pauses: silent	10 pauses: filled	11 revision / repetition (inst.)	12 incomplete sentences	13 imprecision	14 extraneous passages	15 words in extr. passages	16 broken words	17 prolonged sounds	18 false starts	19 clause length	20 speech time (sec)	21 number of interruptions OVER 200 ms in duration	22 'articulation time' (sec) (column 20 minus 21)
Finnish Student	MP	1	94	7.8	0.3	4.9	1.55	0.40	0.30	0.50	18	2	0	0	0	0	0	0	0	6.5	60	35	30
		2	65	6.6	0.1	4.3	1.50	0.40	0.32	0.54	12	3	0	0	0	0	0	0	0	6.5	49	30	22
		3	66	22	0.6	4.1	2.29	0.47	0.35	0.66	13	3	1	0	1	0	1	0	0	9.4	43	36	20
		4	33	16.5	0.4	5.5	1.20	0.52	0.45	0.94	4	2	0	0	1	0	0	0	0	6.6	24	15	10
		5	33	8.2	0.2	3.7	1.50	0.36	0.42	0.67	8	1	1	0	0	0	0	0	0	5.5	21	16	10
Finnish Student	JT	1	87	17.4	0.2	3.8	1.77	0.43	0.28	0.48	21	2	1	0	0	1	3	1	0	6.7	69	43	24
		2	69	23	0.2	3.5	2.22	0.39	0.36	0.60	18	2	3	0	0	0	1	0	0	7.7	55	35	21
		3	83	20.8	0.3	3.8	2.75	0.42	0.35	0.60	20	2	2	0	0	0	0	0	0	10.4	61	48	24
		4	37	18.5	0.4	3.1	2.40	0.54	0.35	0.76	10	2	2	1	1	2	0	0	0	7.4	49	20	12
		5	70	35	0.3	2.8	3.13	0.53	0.23	0.48	24	1	2	0	0	0	0	0	1	8.8	47	40	19
Finnish Student	HI	1	124	17.3	0.1	2.9	2.12	0.41	0.34	0.57	25	11	0	0	0	1	2	0	1	6.1	69	43	25
		2	112	22.4	0.1	2.6	2.87	0.44	0.29	0.50	37	6	1	0	0	0	0	0	0	7.5	83	58	26
		3	177	25.3	0.3	3.1	2.90	0.45	0.28	0.50	49	9	7	1	0	0	1	0	1	8.9	116	73	46
		4	72	72	0.3	2.6	3.50	0.50	0.33	0.67	26	2	1	0	0	0	1	0	1	9.0	53	32	16
		5	90	45	0.5	2.4	3.36	0.49	0.33	0.57	31	6	0	0	0	0	1	0	0	8.2	57	45	20
Finnish Student	SPi	1	80	20	0.1	4.0	1.33	0.45	0.35	0.61	16	4	0	1	1	2	0	1	0	5.3	72	40	23
		2	72	72	0.2	4.5	1.45	0.43	0.33	0.59	14	2	0	0	0	0	0	0	0	6.6	55	23	20
		3	145	72.5	0.3	4.4	1.74	0.47	0.28	0.52	28	5	6	0	0	0	0	0	1	7.6	142	61	51
		4	62	20.7	0.3	6.2	1.29	0.48	0.39	0.74	8	2	2	0	0	1	7	0	0	8.9	44	20	17
		5	58	58	0.2	5.3	1.83	0.52	0.29	0.61	11	0	0	0	0	2	3	0	0	9.7	41	19	14

Finnish Student	MW	1	74	10.6	0.1	2.5	1.88	0.39	0.32	0.52	29	1	2	0	0	0	0	1	1	0	4.6	60	37	22
		2	55	11	0.3	2.6	1.91	0.31	0.40	0.58	20	1	2	0	0	0	0	1	0	0	5.0	40	24	16
		3	81	13.5	0.2	3.1	2.36	0.41	0.33	0.56	22	4	3	0	0	0	0	0	0	0	7.4	60	30	23
		4	57	28.5	0.3	2.9	2.50	0.44	0.40	0.72	19	1	2	0	0	0	0	1	0	0	7.1	44	24	16
		5	73	24.3	0.3	3.0	2.40	0.44	0.33	0.59	23	1	2	0	0	0	0	1	0	1	7.3	59	29	19
Finnish Student	SP	1	62	6.9	0	3.3	1.73	0.37	0.39	0.62	17	2	0	0	0	0	0	2	0	0	5.6	36	23	20
		2	83	16.6	0.3	3.6	1.64	0.40	0.34	0.48	22	1	1	0	0	0	0	0	0	1	5.9	54	31	28
		3	91	30.9	0.5	3.1	2.64	0.44	0.24	0.43	26	3	5	0	0	0	0	0	0	0	8.3	64	41	31
		4	56	14	0.2	2.7	3.50	0.46	0.39	0.73	19	2	0	0	0	0	0	0	0	0	9.3	38	23	17
		5	63	10.5	0	2.6	2.67	0.44	0.35	0.63	24	0	0	0	0	0	0	0	1	0	9.0	40	26	21
Finnish Student	SJ	1	70	8.8	0.1	3.3	1.91	0.39	0.40	0.65	21	0	1	0	0	0	0	1	1	0	6.4	53	22	19
		2	59	8	0.2	3.7	1.78	0.39	0.36	0.58	16	0	0	0	0	0	0	2	0	0	6.6	52	28	17
		3	80	13.3	0.4	3.1	2.36	0.43	0.38	0.65	26	0	2	0	0	0	0	0	0	0	7.3	52	34	20
		4	44	11	0	3.1	2.33	0.36	0.59	0.93	14	0	0	0	0	0	0	0	0	0	7.3	42	18	10
		5	50	16.7	0.2	3.6	2.33	0.48	0.49	0.77	14	0	0	0	0	0	0	0	0	0	8.3	51	25	13
Finnish Student	EK	1	68	13.6	0.2	3.1	2.00	0.44	0.34	0.61	22	0	1	0	0	0	0	0	0	1	6.2	52	29	23
		2	80	16	0.2	3.3	2.00	0.45	0.30	0.55	21	3	3	0	0	0	0	0	0	0	6.7	48	28	22
		3	103	51.5	0.1	2.7	2.71	0.52	0.24	0.71	36	2	4	0	0	0	0	1	0	0	7.4	79	44	43
		4	36	36	0.2	4.0	1.80	0.47	0.42	0.79	8	1	0	0	0	0	0	0	0	0	7.2	22	14	9
		5	85	21.2	0.1	2.6	2.54	0.45	0.24	0.62	29	4	1	0	0	0	0	0	0	0	6.5	62	40	20
Finnish Student	Pik	1	65	21.7	0.3	2.7	2.67	0.42	0.40	0.68	23	1	0	0	0	0	0	0	1	1	7.2	50	29	23
		2	98	98	0.4	2.9	2.43	0.40	0.76	0.63	33	1	1	0	0	0	0	0	0	0	7.0	77	44	32
		3	108	108	0.2	3.4	2.29	0.46	0.35	0.66	30	2	1	0	0	0	0	0	0	0	7.7	86	45	38
		4	57	57	0.5	3.6	2.00	0.49	0.40	0.79	15	1	0	0	0	0	0	0	0	0	7.1	38	18	18
		5	64	64	0.6	3.4	2.78	0.47	0.38	0.71	18	1	2	0	0	0	0	0	0	0	8.0	45	23	20
Native Speaker	AD	1	327	23.4	0.3	9.1	0.66	0.46	0.34	0.32	32	4	3	0	3	8	21	0	0	0	5.5	114	44	87
		2	437	33.6	0.4	11.5	0.76	0.37	0.24	0.39	37	1	7	2	3	12	38	0	0	2	8.7	—	—	—
		3	276	34.5	0.5	8.4	0.89	0.46	0.32	0.59	29	4	8	0	0	8	14	0	0	0	7.5	108	43	81
		4	254	50.8	0.4	10.2	0.78	0.46	0.28	0.52	19	6	2	2	2	10	23	0	0	0	7.9	—	—	—
		5	283	29.3	0.3	10.1	0.72	0.45	0.28	0.50	24	4	3	1	1	4	9	0	0	0	7.3	112	36	74
Native Speaker	AP	1	51	25.5	0.3	5.7	1.13	0.53	0.35	0.75	9	0	0	0	0	0	0	1	0	0	6.4	21	11	13
		2	58	10.6	0.3	4.4	1.71	0.40	0.40	0.66	11	1	0	0	0	0	0	0	0	0	7.6	—	—	—
		3	72	24	0.1	5.1	2.00	0.47	0.35	0.66	11	3	0	0	0	0	0	0	0	0	10.3	41	15	23
		4	40	20	0.5	4.4	2.25	0.50	0.42	0.85	9	0	1	0	0	0	0	0	0	0	10	—	—	—
		5	13	31.5	0.5	3.7	2.13	0.54	0.30	0.79	15	2	1	0	0	0	0	1	0	1	7.9	39	22	21